Complete Summary

GUIDELINE TITLE

Neonatal hypoglycemia: initial and follow up management.

BIBLIOGRAPHIC SOURCE(S)

Newborn Nursery QI Committee. Neonatal hypoglycemia: initial and follow up management. Portland (ME): The Barbara Bush Children's Hospital at Maine Medical Center; 2004 Jul. 4 p.

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Newborn hypoglycemia

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Screening
Treatment

CLINICAL SPECIALTY

Family Practice
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To present guidelines for screening and management of newborns at risk for, or diagnosed with, hypoglycemia

TARGET POPULATION

Newborns at risk for hypoglycemia

INTERVENTIONS AND PRACTICES CONSIDERED

Screening/Diagnosis/Evaluation

1. Assessment using screening criteria (refer to "Major Recommendations" field)
2. Measurement of blood glucose levels

Treatment/Management

1. Early feeding
2. Supplementation (oral, nasogastric gavage, intravenous [IV])
3. Rechecking blood glucose after interventions
4. Weaning from supplementation
5. Referral to specialists as necessary

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The following databases were searched: CINAHL, MEDLINE, and OVID.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The major recommendations for management of hypoglycemia are provided in the form of three algorithms for Newborn Hypoglycemia General Information, Neonatal Hypoglycemia IV Glucose Weaning, and Neonatal Hypoglycemia Feeding.

General Information

Definitions

- Infants <24 hours of age: blood glucose levels should be consistently >45 mg/dL
- Infants >24 hours of age: blood glucose levels should be consistently >50 mg/dL

Screening

Data suggest subtle neurologic findings in asymptomatic infants with persistent hypoglycemia. Thus, a conservative approach to screening high-risk infants has been adopted by most centers.

High-risk infants who need screening for hypoglycemia in the first hour of life include:

- Newborns >4 kg or <2 kg
- Large for gestational age (LGA) >90th percentile, or small for gestational age (SGA) <10th percentile, or intrauterine growth restricted infants
- Infants born to insulin-dependent mothers or mothers with gestational diabetes
- Gestational age <37 weeks
- Newborns suspected of sepsis or born to mother suspected of having chorioamnionitis
- Newborns with symptoms suggestive of hypoglycemia: jitteriness, tachypnea, hypotonia, poor feeding, apnea, temperature instability, seizures, lethargy

High-risk infants are automatically screened via the newborn admission orders either every hour repeated three times (q1 x 3) (infant of diabetic mother or <2 kg) or every three hours repeated twice (q3 x 2) (all other high-risk scenarios).

Infants who also may need screening include:

- Significant hypoxia, perinatal distress, or five-minute Apgar <5
- Infant with mother on terbutaline, beta-blockers, or oral hypoglycemic agents
- Infant with isolated hepatomegaly (rule out glycogen storage disease [GSD]); microcephaly; anterior midline defects; gigantism
- Infants with macroglossia or hemihypertrophy (rule out Beckwith-Wiedemann Syndrome)
- Infants you suspect have an inborn error of metabolism

General Considerations

- All of the newborns listed under "Screening" will need early feedings initiated--either breast or bottle.
- Some of these infants will need supplementation via oral (PO), nasogastric (NG) gavage, or intravenous (IV) route.
- Abnormal glucose values need to be followed by rechecking blood glucose levels after interventions.

- Remember to follow blood glucose levels any time you change an intervention (e.g., transitioning from supplementation with formula to exclusively breast feeding).
- Infants with a respiratory rate >60 may need NG gavage feedings or IV placement.
- Infants that are not responding to your intervention may have other issues (sepsis, inborn errors of metabolism, or endocrine problems). Consider Neonatology consult to assist with diagnosis.
- If an IV is necessary for management, wean slowly after PO feeds are established. See weaning algorithm for management options.
- Contact Neonatology if the patient has two or more abnormal blood glucose values despite interventions or if greater than 120 cc/kg/day is necessary to maintain euglycemic state.

CLINICAL ALGORITHM(S)

Algorithms are provided in the original guideline document for:

- Newborn Hypoglycemia General Information
- Neonatal Hypoglycemia IV Glucose Weaning
- Neonatal Hypoglycemia Feeding

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate screening for and management of hypoglycemia in newborns
- Decreased potential long-term sequelae of unrecognized, prolonged hypoglycemia
- Shorter length of stay because of earlier recognition

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Algorithms are not intended to replace providers' clinical judgement or to create a single protocol. Some clinical problems may not be adequately addressed in this guideline. As always, clinicians are urged to document management strategies.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Educational sessions and skills fair on guideline implementation; distribution of management guidelines to physician staff with admitting privileges to the newborn nursery

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Newborn Nursery QI Committee. Neonatal hypoglycemia: initial and follow up management. Portland (ME): The Barbara Bush Children's Hospital at Maine Medical Center; 2004 Jul. 4 p.

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004 Apr

GUIDELINE DEVELOPER(S)

Barbara Bush Children's Hospital at Maine Medical Center - Private Nonprofit Organization

SOURCE(S) OF FUNDING

The Barbara Bush Children's Hospital at Maine Medical Center

GUIDELINE COMMITTEE

Newborn Nursery QI Committee: Hypoglycemia Guideline Work Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Kelley Bowden, RNC, NNP, Perinatal Outreach Education Coordinator; Barbara Boyle, RN, Project Manager, Center for Performance Improvement; Brian Youth, MD, FAAP, Medical Director Newborn Nursery; Peter J. Marro, MD, Neonatologist; Kim Durost, RN, Nursery Staff Nurse; Beth Bejcek, RN, IBCLC, Lactation Consultant; Aida Stevens, MSN, RN, Nursing Director, Family Birth Center; Janet Oliver-Palanca, RNC, Unit Based Educator, Family Birth Center; J. Peter Chingos, MBA, Manager of Data Analysis, Center for Performance Improvement; Jeff Gregory, Data Analyst, Center for Performance Improvement

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Barbara Bush Children's Hospital at Maine Medical Center Web site.

Print copies: Available from the Maine Medical Center, 22 Bramhall Street, Portland, Maine 04102-3175. Telephone: (207) 662-0111. Contact Lynn Lagerstrom at lagerl@mmc.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on June 3, 2005. The information was verified by the guideline developer on July 6, 2005.

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